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THE EARLY DIAGNOSIS OF
CANCER IN WOMEN

*The L. Duncan Bulkley Lecture**

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ONE of the most important problems in cancer today is the question of prevention and early diagnosis, and this is of special significance in the approach to the control of neoplastic diseases in women, as cancer accounts for more than one-fourth of all deaths in this group. I have purposely chosen the comprehensive title of "Early Diagnosis of Cancer in Women," in the hope that I could present to you evidence that a complete physical examination is the best method of early diagnosis of cancer in women, and that a diagnostic search limited to the breast and pelvis is a rather hazardous procedure, because cancer in women may, and frequently does, involve various anatomical structures in the body.

Analysis of recent mortality figures from the Bureau of the Census, which are available to all, reveals such high percentage of deaths from cancer in the gastrointestinal tract among women that it should raise the question in our minds as to whether every avenue of approach to the early diagnosis and prevention of this disease is utilized by the medi-

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cal profession. It is the consensus of all thinking people that if cancer could be recognized in the incipient stage, this appalling mortality could be materially reduced. There are several obstacles in the way of the successful fulfilment of this ideal. It is most important that the physician reach the individual patient before definite symptoms are evident, and is then equipped to offer trustworthy opinion on this particular branch of medicine. Even with the sincere coöperation of the public and the best training of the physician there will continue to be a group of intrinsic tumors which may develop to an inoperable stage before being recognized by our present diagnostic methods. However, the extrinsic tumors which form the largest percentage of cancers in women can and should be diagnosed in an early stage when treatment is most successful.

It is, therefore, my purpose to offer to you clinical evidence that periodic complete physical health examinations are the best means which can be employed in the early diagnosis of cancer in women and that a *limited* physical examination given to apparently healthy women, either by a physician or in a detection clinic, is a definite risk, as the presence of an early carcinoma in other regions may be overlooked. The very fact that these individuals have been partially examined ostensibly for cancer may create in their minds a false sense of security and may delay consultation with their physicians concerning some minor early symptom in another organ.

In the Strang Prevention Clinics at the New York Infirmary and Memorial Hospital in the past 12 years we have given complete physical examinations to a total of 26,076 seemingly healthy women with a cancer incidence in various organs of 2.1 per cent at the New York Infirmary and 1.3 per cent at Memorial Hospital. Tables I to IV give the results of these examinations, the percentage of incidence of cancer, and the anatomic distribution of the cancers found.

Among the cases at the New York Infirmary, listed here as Miscellaneous, there were 1 case of operable silent carcinoma of the lung, which was encountered in the 1,343 cases examined in the fluoroscopic survey, 2 cases of cancer of the stomach, and 2 cases of cancer of the lymphoid system.

At the Prevention Clinic at Memorial Hospital there were 5 cases of lymphatic disease (2.26 per cent of the total number of cancers found) 2 cases of multiple myeloma; 3 of sarcoma of the soft parts, and 1 primary carcinoma of the liver. In addition there was 1 case of metastatic

TABLE I—STRANG CANCER PREVENTION CLINIC
NEW YORK INFIRMARY—1937-1949

Total number of women examined	6,627	
Total number of cancers, including 9 cases of basal cell carcinoma	142	
Incidence		2.1%
Number of cancers, excluding 9 cases of basal cell carcinoma	133	
Incidence		2.0%

TABLE II—STRANG CANCER PREVENTION CLINIC
NEW YORK INFIRMARY—1937-1949

ANATOMIC DISTRIBUTION OF CANCERS		
<i>Site</i>	<i>No. of cases</i>	<i>Percentage</i>
Breast	96	68.0
Cervix uteri	12	8.5
Corpus uteri	6	4.2
Ovary	4	2.8
Colon and rectum	5	3.5
Skin	9	6.3
Miscellaneous	10	6.7
Total	142	100.0

cancer, the primary source of which was not known. The rectosigmoid cancers found in women numbered 23 (9 per cent of the total). There were 39 cases of cancer of the skin (including 3 cases of malignant melanoma), 3 symptomless cancers of the lung, and 4 cancers of the kidney and bladder.

These figures reveal the wide distribution of cancer in women and seem to show conclusively the importance of a complete physical examination if we are to give the individual the best chance for healthy survival. There is no doubt but that cancers of the breast and pelvic organs together produce the highest mortality of this disease in women; but the frequency of cancer of the rectosigmoid area in women cannot be ignored in computing statistics, or in making a clinical diagnosis of cancer. These are in the group of accessible regions, and for this reason

TABLE III—STRANG PREVENTION CLINIC
MEMORIAL HOSPITAL—1940-1949

Total number of women examined	19,499	
Total number of cancers, including 34 cases of basal cell carcinoma	256	
Incidence		1.3%
Number of cancers, excluding 34 cases of basal cell carcinoma	222	
Incidence		1.12%

TABLE IV—STRANG PREVENTION CLINIC
MEMORIAL HOSPITAL—1940-1949

ANATOMIC DISTRIBUTION OF CANCER		
<i>Site</i>	<i>No. of cases</i>	<i>Percentage</i>
Breast	86	34.0
Uterus, cervix	50	19.0
Uterus, corpus	10	4.0
Ovary	9	3.5
Other female genital organs	6	2.0
Rectosigmoid	23	9.0
Other digestive organs	10	4.0
Skin*	39	15.0
Thyroid	6	2.0
Kidney and bladder	4	1.5
Lung	3	1.0
Miscellaneous	12	5.0
Total	258	100.0

* Including 34 cases of basal cell carcinoma.

newer methods are available to aid in early diagnosis of cancer, even before the presence of any gross lesion or early symptom is recognizable.

The ultimate effect of this early diagnosis in cancer has been noted in the statement which is frequently made that cancer in women is on the increase. This increase is attributable, in part, at least, to the periodic health examinations and the newer diagnostic methods employed, which make it possible to recognize cancer in an incipient stage. However,

the mortality statistics will eventually show a decrease due to this early diagnosis and prompt treatment. This is borne out by the recent statistics of the Metropolitan Life Insurance Company which reveal a decrease of 11 per cent in deaths from cancer in women in 1948, thus bringing the death rate from cancer in women between the ages of 35 and 65 years to the lowest level on record. Unfortunately no accurate comparison can be made at present between incidence and mortality in cancer in women as cancer is a reportable disease in only a few states.

Although these statistics may appear irksome, still they point the way to a definite advance in the control of cancer, for when these neoplasms are diagnosed early and treated promptly there should be a further material decrease in the mortality rate. This desirable result will be achieved only when there is a closer coöperation between the general practitioner and the detection and diagnostic cancer clinics. Therefore, every effort must be made to offer the general practitioner the facilities of the most modern diagnostic technique, especially those available for use in his office, for in the majority of cases his is the first contact with the patient.

In presenting the following cases of cancer found in our clinics I have kept this thought in mind and have emphasized those diagnostic procedures which do not require hospitalization or unusual apparatus.

BREAST

The early diagnosis of cancer of the breast presents many difficulties, although this type of cancer definitely belongs in the extrinsic group of tumors. There are, however, several diagnostic methods which may be of considerable aid in reaching an accurate diagnosis, and probably the most important is careful but gentle palpation of the breasts by a well-trained physician. A great deal of information may be gleaned by this simple procedure if one is familiar with the normal functional changes in the breast and takes into account the age of the individual in drawing any deductions as to the nature of the lesions.

The aspiration biopsy of a mammary tumor, when properly employed, is one of the most dependable adjuncts in the early diagnosis of neoplasms in this organ, and offers an accurate histological picture in approximately 90 per cent of the cases.

The technique is not difficult and should be available in a well-equipped physician's office or a clinic. Its greatest usefulness is the

rapidity with which a diagnosis may be obtained and, according to our experience at Memorial Hospital, no harmful effects follow this diagnostic method. However, a highly trained pathologist should interpret the smears. A negative finding is of no significance and where there is clinical evidence of neoplasm a surgical removal of the breast nodule, with immediate gross and microscopic examination of the tissue, should be the rule; with arrangements made for radical mastectomy without delay if the diagnosis is positive for cancer.

The use of the Cameron light for transillumination of the breast may aid in differentiating cystic from solid tumors, and with experience may be a valuable asset in confirming the clinical diagnosis of benign tumors.

The examination of secretions from the breast by the Papanicolaou smear method has not been entirely satisfactory in our clinics, except in cases of papillary adenocarcinoma in close proximity to the nipple or of papillomata occurring within the large ducts beneath the nipple, with which there is associated a definite discharge from the nipple. We have confirmed two cases of papillary cystadenocarcinoma of the breast by this method. There is still much research to be done on cytological examination of the breast secretion for such material is difficult to obtain and massage of a breast which contains any tumor mass is not without the risk of spreading an active cancer and is definitely contraindicated.

The greatest dependence, therefore, in our experience in recognizing early cancer of the breast, must be placed on the accurate clinical examination in each case with aspiration biopsy of suspicious nodules. Where both of these methods prove inadequate, reliance should be placed on surgical removal of the suspected lesion.

In the 86 cases of cancer of the breast found in presumably healthy women at the Strang Prevention Clinic, 68 per cent of the patients were free from disease one to eight years later; 68 were diagnosed on the first visit to the clinic, and 18 on the second visit.

UTERUS, CERVIX, AND CORPUS

The early diagnosis of cancer in the pelvis has been greatly advanced by an important addition to the routine pelvic examination. This is the cytologic smear method first described in 1943 by Papanicolaou who identified cancer cells in vaginal secretions. The test is based on the principle that malignant cells, because of their proliferative activity,

TABLE V—CERVICAL CARCINOMA IN APPARENTLY WELL WOMEN
1947-1948

Vaginal smears examined	7,000	
Cases of carcinoma of cervix.....	24	
Carcinoma in situ		19
Carcinoma, invasive		5
Incidence of cervical carcinoma	3.43 per 1,000	

exfoliate rapidly, usually before any evidence of neoplasm can be observed. This theory created an entirely new field of research in the early diagnosis of cancer and the test has wide future use, since it may be applied to any body secretion.

As the first observations were made on vaginal secretions, much of the research has been concentrated on the cytologic diagnosis of early carcinoma of the cervix and corpus uteri. This research has within the past few years established this method as one of the earliest indicators of neoplastic growth in the pelvic organs, and there is every evidence that with improved and expanded training in the interpretation of these smears this simple but definite test will become of general diagnostic importance in cases of early cancer of the uterus.

The fact that the cytologic smear is positive in many instances before there is any evidence of a gross lesion of the cervix, or before the onset of the earliest symptoms, is confirmed in the Strang Clinics, where more than 62 per cent of cancers of the cervix, both the preinvasive types and the early infiltrating carcinomas, were first recognized by the Papanicolaou smear examination and later confirmed by punch biopsy of the cervix or endometrial biopsy of the corpus.

The importance of the cytologic smear in the diagnosis of cervical cancer is emphasized in our statistics for 1949 where the incidence of cancer of the cervix has exceeded that of cancer of the breast, for the first time in the records of our department. This is undoubtedly due to the more frequent recognition of carcinoma in situ in this organ, cases which would have been overlooked without this valuable aid.

The Papanicolaou smear test is easily performed and it should be a routine procedure in any physician's office or in a clinic; but the prepared smear must be sent to a laboratory for diagnosis, since the proper

interpretation requires a well-trained person. A positive smear must be confirmed by a punch biopsy. The Schiller iodine test may be helpful in locating the lesion and should be employed as an added precaution.

In a case of preinvasive cancer of the cervix, the patient, 39 years of age, came to the clinic for a routine examination. She had no symptoms, and a positive smear was the first indication of cancer in the cervix. Examination of a histological section from a later punch biopsy confirmed the diagnosis. The prognosis in such a case is excellent.

There has been so much controversy concerning the clinical significance of preinvasive carcinoma of the cervix that perhaps a word of explanation of the nature of this disease is desirable. In this type of carcinoma of the cervix we find some of the histological features of a malignant process such as changes in cell type, from squamous to polyhedral, with large hyperchromatic nuclei, beginning loss of basement or basal layer and some mitosis. This proliferative activity is still confined to the squamous layer and does not show invasive tendency. These early cancers may remain localized for considerable periods of time, not days or weeks but months or even years.

As a rule this non-infiltrating carcinoma of the cervix does not give clinical symptoms nor is it evident on the most careful visual examination of the cervix. In fact the cervix often appears more normal than in the average individual. This indicates that an alertness on the part of the physician that such a condition exists and that the recognition of it is possible in this silent period should lead to a more intensive search for these silent cancers in an effort to reduce the mortality from this disease.

In another case of interest, the patient, 48 years of age, came to the clinic without symptoms or any evidence of disease. An early infiltrating cancer of the cervix was first recognized by means of the cytologic smear. In this case a complete panhysterectomy offered a fair prognosis and, in fact, the patient is alive and free from disease eight years after the operation.

Carcinoma of the corpus affects women in an older group, the average age being about 50 years, and usually after the menopause. Only one of our cases of cancer of the corpus in the Strang Clinic at Memorial Hospital occurred before that time. The earliest symptoms are usually the onset of postmenopausal bleeding or an unusual or active leukorrhea. Either of these happenings should be viewed as very suggestive by the

patient and surely by an alert physician. Unfortunately, at this time there is often well-developed disease in the endometrium and the prognosis will be correspondingly poor. Here again the routine endometrial smear examination offers a most valuable method for the recognition of this type of cancer in an early and therefore favorable operative stage.

In 6 of the 10 cases in the Strang Clinic at Memorial Hospital, the first smears were positive; in 2 cases repeat smears were positive. All of these were confirmed by curettage. Four of the patients are free from disease five years after operation. Two of them were sent to their local physicians for treatment, and unfortunately no report on these cases has been obtained.

One of these corpus cases is very interesting. About two years ago a nurse in the Strang Ward at the New York Infirmary was enthusiastic about the Papanicolaou smear technique, and although she had no symptoms she decided to take a smear of herself. When this was sent to the laboratory a positive diagnosis of endometrial cancer was made; this was confirmed by curettage, and a panhysterectomy was performed. The gross specimen showed an early adenocarcinoma limited to the endometrium with no infiltration into the myometrium and no metastasis. Here also the prognosis is good. The patient is free from disease at the present time, over two years after operation.

There were 9 cases of carcinoma of the ovary in the group of 256 cases of cancer at Memorial Hospital Strang Clinic and 4 in the group of 142 cases at the Strang Cancer Prevention Clinic at the New York Infirmary. That is about 3.2 per cent incidence in the 398 cases of cancer in both clinics.

There are several points of interest in these reports on carcinomas of the ovary. First, the Papanicolaou smear method is of little value in recognizing this type of pelvic cancer. Second, one of the patients at the Strang Prevention Clinic at Memorial Hospital had had a cystadenoma of the right ovary removed two years previous to acceptance at the clinic, but no symptoms were evident when she applied for admission. However, on pelvic examination a palpable mass was discovered in the left parametrium, which on operation proved to be carcinoma. This incident may serve to emphasize the fact that carcinoma of the ovary is frequently bilateral and it is a wise precaution on the part of the surgeon to remove both ovaries and the uterus at the first operation.

A third interesting case occurred at the New York Infirmary. A woman, 42 years old, was examined in the clinic and a fibroid uterus was discovered. However, as it is routine to take Papanicolaou smears on all cases, this was done and, on examination, the smears were found to be positive for cancer cells. A diagnostic curettage was done. The curettings showed islands of metastatic carcinoma imbedded in the endometrium. At this time no ovarian masses were palpable, but total hysterectomy and bilateral oöphorectomy were performed. Microscopic examination of the specimen revealed multiple small foci of carcinoma with psammoma bodies primary in both ovaries with extensive metastases to the endometrium and cancer emboli in the vessels. Such a case serves to illustrate the fact that cytologic smears from the uterus are probably negative for ovarian cancer except when there is metastasis or extension to the endometrium.

There were 2 cases of carcinoma of the vagina in our group of 258 cancers at Memorial Hospital Strang Prevention Clinic. One of these was of the preinvasive type of epidermoid carcinoma and the other an infiltrating carcinoma. Both of these cases were recognized by the Papanicolaou smear method of diagnosis. In the first, the preinvasive type, the prognosis was excellent and the patient is alive and free from disease today.

The second case was interesting from several angles. Four years previous to admission to the clinic the patient had a radical mastectomy for cancer of the breast but there was no evidence of a recurrence at the time of her first visit. The routine pelvic examination was negative except for a persistent positive cytologic smear which could not be verified by biopsy. This inability to establish a confirming diagnosis was later explained when at operation a small infiltrating plaque was found high in the posterior vault of the vagina, which had been completely obscured by the hypertrophied cervix and the examining speculum. This patient is alive and free from recurrence two years after a radical resection and hysterectomy. This case again demonstrates the accuracy of the positive cytologic smears in the diagnosis of pelvic disease.

GASTROINTESTINAL TRACT

The most frequent anatomic location of cancer in women, outside of the breast and pelvis, was the gastrointestinal tract, in which occurred 33, or 15 per cent, of the cases of cancer in the 256 encountered at the

TABLE VI—PROCTOSCOPIC SURVEY OF 4,038 WOMEN 1946-1949

Number of patients	4038
Negative	3853
Cancers	9 (0.2%)
Polyps	173 (4.3%)

Strang Prevention Clinic at Memorial Hospital. Of these, 23 were located in the rectum and sigmoid. About 50 per cent of patients reported vague symptoms, such as flatulence, constipation, and hemorrhoids. In all these cases diagnosis was made by routine proctosigmoidoscopic examination. In fact, one of them is the case that convinced us that a routine proctoscopic examination is essential in a complete examination of women.

This patient came for a physical examination, and the only evidence of any disease was an eroded cervix. Smears of the cervix, as well as punch biopsies, were persistently negative. However, on manual rectal examination at her second visit there was suggestive resistance to the examining finger and a proctoscopic examination was ordered. This revealed an early carcinoma in the upper sigmoid. The patient was referred back to her physician for operation and his report of early carcinoma of the sigmoid confirmed our diagnosis. The patient is free from disease 5 years later.

A research problem, to extend the use of the cytological smear diagnostic method as an aid in determining the presence of cancer in the colon beyond the reach of the sigmoidoscope is being carried on in the Papanicolaou department in our clinic. Thus far, about 100 women have been examined by means of aspiration of colonic washings, with interesting results, and we hope this method will eventually prove of value in recognizing some of the earlier carcinomas of the upper colon.

In our proctoscopic examination we consider polyps of the rectum and sigmoid as precancerous lesions. Whenever feasible, these are removed by the examining specialist or the patients are referred back to their own doctors for this procedure. In our experience we have found several of these polyps with evidence of beginning carcinoma in one area, and we consider they are therefore potential factors in the occurrence of cancer of the lower bowel.

The gastric fluoroscopic survey of all patients over 45 years, without gastrointestinal symptoms, revealed 2 carcinomas of the stomach and 1 myosarcoma of the esophagus, in 3500 women so examined. One of these occurred in a young woman, but when she was referred to her physician for treatment he found she was pregnant and the gastric symptoms were apparently identified as the vomiting of pregnancy. She survived only three months after delivery.

The second patient, a woman 60 years of age, with a fibrosing carcinoma of the pylorus, is still alive. This case is interesting in that with all the most modern diagnostic methods—x-ray, gastroscopic examination, gastric analysis, and smears—an accurate diagnosis was not made until operation for a partial gastric resection. It serves to illustrate the difficulties which surround the early diagnosis of gastric cancer even with the most modern methods.

In addition, a third case of cancer of the stomach in women was diagnosed in the routine physical examination, since the patient had gastric symptoms and was therefore not eligible for the survey. The diagnosis was confirmed by roentgen examination.

Papanicolaou smears of the gastric secretion are not entirely satisfactory on account of changes which are produced in the cells by the gastric juice.

At the present time the greatest reliance for early diagnosis of gastric cancer must be placed on accurate radiographic examination. This raises the question as to whether a routine gastrointestinal x-ray series should not be part of the program for the prevention and early diagnosis of gastric cancer. Such a procedure is being contemplated but the results are as yet insufficient to permit the drawing of definite conclusions as to the ultimate value.

THYROID GLAND

Carcinoma of the thyroid gland occurred in 7 of the 256 cases at Memorial Hospital Strang Prevention Clinic, and all were of the papillary adenocarcinoma type with the single hard nodule in the gland. Five, all without symptoms, were diagnosed by palpation on the first visit. This emphasizes the importance of the single hard nodule in the thyroid which is often neglected in the routine examination, for most of the patients are asymptomatic. As the nature of the mass cannot be determined except by surgical biopsy, a more serious view of these

apparently insignificant lesions should be adopted by the medical profession. The life history of these tumors varies. Some remain quiescent for a long period and others acquire active growth and develop distant metastases. It is the uncertainty of the exact nature of the condition which suggests the surgical removal of all such lesions.

SKIN

The incidence of skin cancer is not surprising. There were 39 cases in the total of 256 cancers at the Memorial Hospital Strang Prevention Clinic; 34 of these were of the basal cell type and were diagnosed by surgical biopsy. This is the method of choice for superficial lesions, but the operation should be extensive enough to remove the entire lesion. Punch biopsies of such lesions are definitely contraindicated, and should be avoided unless full excision of the lesion is to follow promptly. Three of the cases were malignant melanomas; these were also diagnosed by wide surgical biopsy. All of these skin conditions were recognized on the first visit to the clinic.

MISCELLANEOUS

In the miscellaneous group of carcinoma are included 4 cases of bronchogenic carcinoma of the lung. All were without symptoms, and the disease was first recognized by the admitting photoroentgen examination. Three of these cases occurred at the Memorial Hospital Strang Clinic and were inoperable. One of the patients had been examined by her physician one year previous to admission to our clinic, and she brought her x-ray films with her. When these were examined they confirmed the diagnosis made by our photoroentgen examination. One of these cases of bronchogenic carcinoma was discovered at the New York Infirmary in the routine examination of a young woman, and this was the only one which was early and therefore operable. The cytologic smear examination for bronchogenic carcinoma offers an excellent field for research. The results in the few cases we have examined by this method have been satisfactory, and when the material obtained was sufficient, the presence of cancer cells could be readily demonstrated. Bronchial aspiration as a diagnostic method is still a research problem in these clinics.

These cases are mentioned to draw attention to the fact that in our series bronchogenic carcinoma has nearly as high an incidence in women

as in men and to emphasize that a wider conception of the distribution of cancer in women is necessary if we are to be on the alert to recognize cancer.

In this miscellaneous group at the Strang Prevention Clinic at Memorial Hospital, mention must be made of 4 cases of renal and bladder carcinoma diagnosed by Papanicolaou smears on the second and third visit to the clinic. Here, also, through the routine photoroentgen examination, 2 cases of asymptomatic multiple myeloma were diagnosed and the patients referred to their own physicians.

The routine blood examination identified 3 cases of leukemia. One of these patients, who was examined at the Strang Prevention Clinic at the New York Infirmary, is alive ten years following radiation treatment.

REVIEW OF DIAGNOSTIC PROCEDURES

In this report of the results obtained in the Strang Clinics in the early diagnosis of cancer in women it seems advisable to emphasize the diagnostic procedures most useful to the practitioner and to indicate their application in the general practice of medicine.

The cytologic diagnosis of tissue obtained by aspiration or by direct smears of surface tissue deserves first place in neoplasms of the female genital tract. The future application of this method to other locations is still in the research stage of development, but the meager reports available offer great promise in this field.

We have had excellent results in the examination of sedimented urine by the Papanicolaou smear method. In fact, in our two cases of bladder and kidney tumors, both were first recognized by this method. This is also true in our examinations of sputum. Every patient with chronic cough has the sputum examined and search made for cancer cells. We do not examine bronchial washings, as the obtaining of these requires special apparatus and technique and the procedure cannot be properly carried out in a general clinic or doctor's office. The examination of rectal washings is promising. The test is easily performed and in cases where information regarding conditions beyond the sigmoidoscope is required it should prove of great value.

The surgical biopsy still holds first place for accuracy in diagnosis. It is readily available for all extrinsic lesions and whenever possible should be relied upon for the final opinion. In deeper structures, such as the breast, this type of biopsy becomes a surgical procedure and re-

quires hospitalization with preparation of the patient for immediate operation should the diagnosis be positive.

Roentgenologic examination is the most valuable diagnostic aid for intrinsic tumors of the gastrointestinal tract, genito-urinary tract, and lungs. However, this can be supplemented by Papanicolaou smear examination of secretions, as previously stated.

The proctosigmoidoscopic examination for rectal and colon disease gives the most accurate information as to conditions in the lower bowel and should be a routine procedure in any clinic or physician's office. It is easily performed but requires some previous preparation if the examination of the bowel is to be accurate. Where there is any evidence of disease, either polyp or other manifestation of pathological change, a barium enema is advisable, with air contrast. This method will give the best information concerning lesions in the ascending and transverse colon and cecum. The necessary apparatus is not as a rule available in the doctor's office, but should be part of every well-equipped clinic, and the amount of information obtained is important enough to warrant sending the patient to a radiologist for the special examination.

These special tests are all valuable, but they are of secondary importance to the complete periodic physical examination of apparently healthy women in the diagnosis of early cancer.

PERIODIC HEALTH EXAMINATIONS

About 23 years ago the late Dr. James Ewing emphasized the possibility of cancer prevention in the control of cancer and suggested that patients themselves observe any unusual abnormal conditions and report their findings to their own physicians. Unfortunately, by the time any real evidence of the disease is apparent, the neoplasm may have reached an inoperable stage, or the physician, not himself acquainted with the earliest signs of cancer, may overlook the significance of the early lesion.

There seemed to be only one way to develop the idea of cancer prevention, that is, by periodic examination of apparently healthy individuals. In this way the very earliest symptoms of the disease might be recognized and the full development of cancer prevented. This was the idea behind the cautious experiment, started at the New York Infirmary in 1937, which was known as the Kate Depew Strang Cancer Prevention Clinic. It was the first practical attempt to give apparently healthy women a complete physical examination periodically.

The acceptance by the public of this method of health examination was gratifying, and after three years' experience the results at the original clinic convinced Dr. Ewing of the feasibility of such a form of preventive medicine, so that in 1940 a similar clinic was organized for women at Memorial Hospital.

The method in these clinics is to give as thorough a physical examination as can be made in a doctor's office or clinic. This is not limited to any one part of the body but includes a complete survey of the skin surfaces, nasal and oral cavities, and eyes and ears, and determination of blood pressure, height, and weight. The chest is examined by percussion and auscultation. A photoroentgen or fluoroscopic examination of the chest is made on all patients. Palpation of the abdomen is followed by a pelvic examination, which includes vaginal and cervical Papanicolaou smears. Any suspicious lesion or smear is confirmed by surgical punch biopsy of the affected area. A manual rectal examination is routine, with a proctosigmoidoscopic examination of all patients over 40 years. Complete blood count, urinalysis, and serological tests for lues are performed on all patients at their first visit. A roentgenoscopic survey for asymptomatic gastric cancer is done on all patients over 45 years. This entire procedure is repeated at the annual re-examination. All patients under 45 years are urged to return annually for a check-up and those over 45 to return every six months.

With the gradual growth of these clinics we have added all of the most recent proved diagnostic methods in the effort to give as thorough an examination as is possible to determine the presence of the early manifestations of cancer and to identify conditions which might be regarded as precancerous or predisposing to cancer. These diagnostic examinations have all been tested for their value and are simple enough to be available in any well-equipped physician's office or hospital clinic. None of them require hospitalization.

No treatments are given in these clinics. When evidence of cancer or any other disease is found patients are referred to their own physicians or, if none, to a clinic in their own neighborhood, or to a list of physicians approved by the County Medical Society.

RESUME AND CONCLUSIONS

The value of these periodic cancer health examinations as conducted in well-organized clinics is three-fold:

First, they educate the individual in the importance of a thorough physical examination at least once a year to maintain a reasonable degree of health and prevent, if possible, the development of inoperable cancer. In those persons who have a "fear of cancer complex" due to their family history, such examinations have an inestimable good effect in lessening anxiety.

Second, they are the most efficient means of stimulating the medical profession into an awareness that neoplastic diseases are a clinical entity, exhibiting only the most insignificant symptoms in the early stages.

Third, they prove that these early manifestations of cancer can best be recognized by the use of the most modern diagnostic procedures. It is for this reason that physicians should take advantage of the opportunity offered through refresher courses in these prevention and detection clinics, to acquaint themselves with the advances in diagnosis.

The medical colleges are beginning to realize the importance of this subject and Cornell University Medical College has established, as an integral part of the Department of Preventive Medicine, a course in cancer prevention which is obligatory for third year students. This course is given in the Strang Prevention Clinic at Memorial Hospital. A similar course is offered as an elective for fourth year medical students from other colleges in New York City. It is hoped that in the future such courses will become a part of every medical college curriculum.

The immediate need in the control of cancer is for more accurate early diagnosis, and I repeat that to accomplish this desired result there must be offered to the general practitioner, for he is the first one to come in contact with the patient, more active coöperation with the detection centers. The Strang Cancer Prevention Clinic at Memorial Hospital, because of its association with a large cancer center, has the opportunity to act as a pilot clinic for guidance in establishing other prevention and detection centers in strategic locations, either as separate units or in affiliation with already established diagnostic cancer clinics. The hospitals and diagnostic clinics are ready to offer the use of their pathologic laboratories for difficult microscopic examinations or to make radiologic diagnoses.

In this way periodic cancer health examinations with access to the most recent diagnostic methods may be made available to a wider group of individuals and the burden of these periodic cancer health examina-

tions will be shared by the prevention and detection centers with the general practitioner. There is no easy way to solve the riddle of cancer control and early diagnosis; only by long, concentrated work and study can there be evolved the most practical way to attain this desired goal.

With this brief review of the results obtained in our clinic, I want to impress on you again and again that the best method of securing early diagnosis of cancer in women is by periodic health examinations of those who are apparently healthy. This is the only way by which we can have the opportunity to examine these women and possibly to reach a diagnosis before the onset of significant symptoms. That such examinations should be made periodically is shown by our records, for out of the number of patients who made return visits in our clinic over a period of ten years, one-tenth of one per cent developed carcinoma, anywhere from two to six years after their first visit, none less than one year.

That these examinations should be as complete as possible is indicated in our statistics by the frequent incidence of carcinoma in women in other locations than the breast and pelvic organs. The number of cancers in the gastrointestinal tract should dispel the misconception that examination of the pelvis and breast in women gives an adequate picture of the presence or absence of early carcinoma. Furthermore, two distinct types of cancer may be found in the same individual, each quite unrelated to the other, as we have observed in several of our patients.

All of these facts indicate that every physician should give as complete an examination as possible annually to all his patients, and be constantly on the lookout for suspicious lesions. Not all of these questionable symptoms will prove to be serious, but early diagnosis of the few that are, will be the means of saving lives and, no matter what the cost, each life so rescued is definitely worth the effort.

The future control of cancer rests on research, prevention through early diagnosis, and prompt, adequate treatment. Research is in the future. No one knows how distant the discovery of the cause or cure of cancer may be. In the meantime, the important problem is for more accurate early diagnosis in cancer. Every member of the medical profession should take an active part in this broad program and should share responsibility in the efforts being made to reduce the mortality from one of the oldest and most serious of human diseases.